Sustainable global operations management and frugal innovative sustainable production methods: advancing theory and practice for a truly sustainable society

Article (Accepted Version)

Sustainable global operations management and frugal innovative sustainable production methods: Advancing theory and practice for a truly sustainable society

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Editorial

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Abstract

This editorial aims to introduce the relevance of the special issue and summarize the major contributions of the accepted papers. In addition, it proposes a research framework that could serve as a pointer for future researchers to proceed with further research challenges in the field of global operations management in terms of a need for advancing theory and frugal innovative production methods for achieving a sustainable society.

Keywords: Global operations management; frugal innovation; sustainable production methods

1. Introduction

Globalization is an inevitable strategy for businesses as well as a major challenge in contemporary society, if not properly dealt with. The nature of business today is more international, with profound influences for companies, customers, and suppliers. Companies are becoming increasingly global, and they aim for better results and gains from optimization in terms of their production, operation, and markets (Cheng et al., 2015). According to Gunasekaran and Ngai (2012, p. 687):

"Managing global operations in both manufacturing and service organizations has evolved tremendously over the years with the change in market requirements […], thereby compelling enterprise operations to sustain and gain competitive advantage."

This transformation in society and, consequently, in business activities mandates new frameworks, research agendas, and empirical evidence to understand. This paves the way to develop new theories in many fields of business and management, such as marketing, human resources, operations management, and finance.

But the state-of-the-art literature on global operations management still has many research gaps, both in theory and practice. One of the dominant gaps with respect to sustainability is the lack of knowledge of the integration of global operations management and sustainable production challenges (Subramanian and Gunasekaran, 2015). Recent studies suggest that considering research on sustainability and environmental management issues when dealing with global operations management provides foundations for scholars to develop new theories and practices (Cheng et al., 2015; Angell and Klassen, 1999). Specifically, there is no connection between transfers of frugal operational innovative sustainable methods and low-cost sustainable methods to global operations. We refer to frugal operational innovative sustainable methods as indigenous as they are based on regional low-cost, specific values and practices. Furthermore, from the sustainability perspective, any businesses

can be successful if it grows globally and adapts by understanding local issues in depth. Global operations include procurement, production, distribution, packaging, transportation, marketing, support services, and people management. Global businesses cannot directly implement successful strategies due to global presence that need to be tailored according to local needs. This is applicable to sustainable production methods where every part of the world has its own unique way of dealing with resources, processes, materials, technology, conserving energy, and emissions. Successful global operations learn from local best practices and requirements to make workable sustainable practices. For example, GE adapted very well to various countries' contexts and learned their needs, and later on transferred their learning as a product to the whole world. Products include a low-cost handheld ECG device for rural India and portable ultrasound machines for rural China, with these new products subsequently being sold to customers worldwide (Immelt et al., 2009). Similarly, this concept is not only applicable for managing production operations worldwide, but is also applicable to managing service operations. One of the prominent examples in the health care sector is the Aravind Eye Care system in India, whose business model is replicated by many global business operations to create a sustainable business model (Rosenberg, 2013). Basic intent of this special issue is to uncover the best frugal operational, innovative, sustainable methods that have been succesfully operationalized by global businesses.

This special issue will be unique in the way it aims to capture the linkage between local sustainable methods with global operations with respect to productivity and competitive strategies, demand management, supply chain management, production planning and control, project management, enterprise resource planning and information technologies, logistics, people and talent management, and support services (Gunasekaran and Ngai, 2012). In summary, the call was seeking theoretical and practical research avenues, frameworks, drivers, barriers, and best practices to integrate local sustainable production methods and global operations.

The special issue call received 14 papers, out of which six papers got accepted, for an acceptance rate of 42%. We are thankful to the Editor-in-Chief and 30 reviewers for their valuable time and effort to make this issue successful. We also sincerely thank the managing editor and professional support team for their commitment and proactive support in completing the project successfully.

2. Summary of accepted papers

2.1. Sustainable supply management

Kaur and Singh develop a mixed integer linear programming model to optimize carbon emissions that will enable supply chain managers to make a procurement decision to procure materials with low carbon emission transportation. The model includes three basic aspects of procurement such as ordering, holding, and transportation. The study is able to show that there is a real cost saving when carbon trading is considered. The authors validated the model using manufacturing case study but it can be widely applicable for procurement decision in any industry that includes lot sizing, supplier selection, and logistics.

2.2. Global sustainable competitive strategies

Wu et al. considered the time dimension to classify practices, capabilities, and performance for firms to think about achieving sustainable competitive strategies. The authors proposed a two-dimensional sustainability framework to balance short-term and long term sustainability through short-term versus long-term practices, capabilities, and performance. The authors adopted systematic literature review and summarized theories in terms of external and internal pressure as well as capability development that could stimulate companies to develop unique capabilities. The authors used Yinyang philosophy to explain the co-existence of both short- and long-term aspects in practice, capabilities, and performance.

The other study in this category is by Pallero et al., which reviews the status quo of sustainable service-based business models in the Chinese truck sector. The authors reviewed the product service system and service-based business model in the automotive sector to suggest potential pathways for firms to redesign their business models to satisfy multiple objectives such as profitability, customer satisfaction, and sustainability. The finding suggest that end-of-life management of trucks is very poor in emerging economies, and there is a need for an integrated, results-oriented product service system business model that is equally applicable to other countries.

The third article by Nunes and Park in this category discusses the importance of corporate strategic intention and its actual implementation of sustainable practices. The authors question how many firms are building their corporate and social reputations with sustainable and unsustainable operations. The authors propose two theoretical frameworks to argue true or false social and environmental corporate reputations. Interestingly, the study discusses the possibilities of sustainability washing without sustainable operations.

2.3. Sustainable demand management

Wang et al. propose a port services decision model that enables port authorities to better understand the customer and develop a sustainable business operation considering environmental and social attributes in cost, service, and facilities. This model will help to develop sustainable port operations to compete with other ports. The major findings are a need for port infrastructure improvement considering social and environmental aspects, cargo safety, and reduction in charges. The study indicates how port operations managers can reconfigure their operations based on customer expectation.

2.4. Sustainable production planning and control

Consideration of environmental and economic aspects in tactical decision-making is explained well by Elzakker et al. The authors have shown that with 1% optimality tolerance, it is possible to reduce environmental impact by 6.3% with an increase in total cost of 5.2% in fast-moving consumer goods industry stock keeping units. The authors also developed a stock keeping unit decomposition algorithm to optimize environmental and economic impacts in larger supply chains. The tactical planning model includes ingredients, transportation, production, and storage.

3. Global sustainable operations management framework

Using a traditional operations management framework that involves input, processes, and output, we developed our global sustainable operations management framework, which includes sustainable supply chain management as input, sustainable production planning and control as processes, and sustainable demand management as output. In addition, we considered how the companies are developing global competitive strategies to manage the three aspects to achieve sustainable production targets.

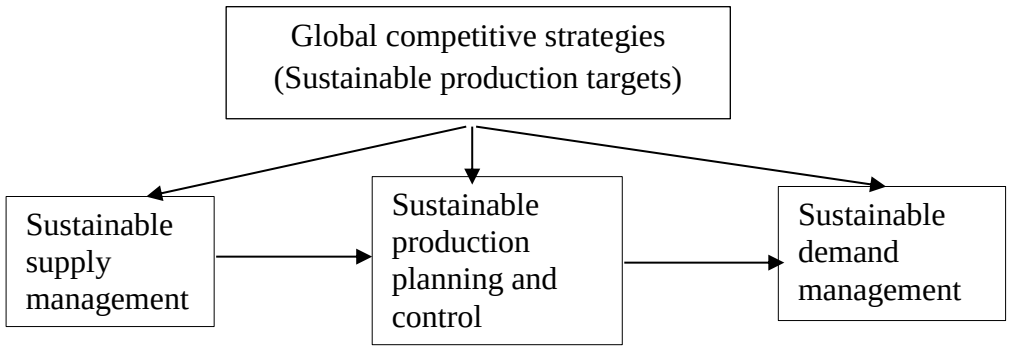

Figure 1: Global sustainable operations management framework

4. Suggestions for future research

The following are some of the future research questions toward sustainable global operations management and frugal innovative sustainable production methods for a sustainable society:

(1) Productivity and global competitive strategies considering sustainable production targets

- How to combine global operations management flexibility, cost-cutting, and environmental improvements?
- How do local sustainable production methods help companies improve global competitiveness?
- How can one analyze local sustainable production as a challenge and opportunity for global operations management competitiveness?
- What is the relationship between competitive priorities of global manufacturing (cost reduction, flexibility, etc.) and sustainable production?
- How can a business disseminate sustainable production through international chains?

(2) Demand management

- How should one consider global environmental restrictions, challenges, and environmental damages during demand planning and control in a global perspective?

- How can scarcity of resources affect demand management and global operations management?
- What are the main expectations of customers across the globe in terms of sustainable production?

(3) Supply management

- What are the main impacts of global supply management in terms of sustainable production, environmental footprint, and climate change?
- How does a company optimize links between customers, focal companies, and suppliers to align sustainable production's targets across international supply chains?
- What are the main drivers and barriers for implementing green supply chain practices across the globe?
- Need for a low carbon procurement model for perishable products with stochastic demand.

(4) Production planning and control

- How should one consider sustainable production in the traditional models and frameworks for production planning and control?
- How are new approaches, such as remanufacturing, shaping production planning and control across global operations management?
- How can firms deal with different legislation on environmental management and waste management from different countries when managing global operations?

5. Concluding remarks

This special issue will be supporitive of advancing the theory and practice of sustainable global operations management and frugal innovative sustainable production methods toward a sustainable society. The future research questions are highlighted in the previous section, which can be addressed through developing conceptual models and empirical research. Moreover, the performance measures and metrics should be identified to support the efforts of achieving a truly sustainable society. The framework presented in Figure 1 should be developed further in order to clearly articulate the relationship between global competitive strategies and sustainable sluppy management, production planning and control, and demand management. We are pleased this special issue will form the foundation for further research and applications.

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References

Angell, L. C., & Klassen, R. D. (1999). Integrating environmental issues into the mainstream: an agenda for research in operations management. *Journal of Operations Management*, *17*(5), 575-598.

Cheng, Y., Farooq, S., & Johansen, J. (2015). International manufacturing network: past, present, and future. *International Journal of Operations & Production Management*, *35*(3). DOI: 10.1108/IJOPM-03-2013-0146

Immelt, J. R., Govindarajan, V. and Trimble, C. (2009), "How GE Is Disrupting Itself", *Harvard Business Review*, Vol. 87 No. 10, pp. 56-65.

Gunasekaran, A., & Ngai, E. W. (2012). The future of operations management: an outlook and analysis. *International Journal of Production Economics*, *135*(2), 687-701.

Rosenberg, T. (2013). A Hospital Network With a Vision. *The New York Times*, http://opinionator.blogs.nytimes.com/2013/01/16/in-india-leading-a-hospital-franchise-with-vision/?_r=0 Last accessed on 18 January 2015.

Subramanian, N., & Gunasekaran, A. (2015). Cleaner Supply-Chain Management Practices for Twenty-First-Century Organizational Competitiveness: Practice-Performance Framework and Research Propositions. *International Journal of Production Economics*, In Press, DOI:10.1016/j.ijpe.2014.12.002